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10/728,655

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Michael J. O'Phelan

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EXAMINER

NGUYEN, HA T

ART UNIT

PAPER NUMBER

2812

DATE MAILED: 08/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/728,655

Applicant(s)

O'PHELAN ET AL.

Examiner

Ha T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12, 36-46, 49-55 and 70-74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 36-46, 49-55 and 70-74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12-05-03
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 38 is objected to because of the following informalities: In line 2, substitution of "matably" with --matchably-- is suggested for correctness. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103<sup>©</sup> and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-7, 9-12, and 39-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rorvick et al. (USPN 6009348, hereinafter "Rorvick") in view of Funari (USPN 4171477).

Referring to Figs. 4-6 and related text, Rorvick discloses [Re claim 1] a method of joining a connection member to a foil, the method comprising: positioning the connection member and the foil against each other; and forcing the connection member and the foil together between a hardened surface and a staking pin; [Re claim 2] wherein forcing the connection member and the foil together comprises striking the foil with the staking pin and forcing the foil into the connection member; [Re claim 7] wherein the foil comprises an etched anode foil (see col. 5, lines 27-33). But it fails to disclose expressly that the staking pin has a tip of less than or equal to approximately 0.030" (0.762 mm) in diameter. However, the missing limitation is well

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known in the art because Funari discloses this feature (See col. 8, lines 13-15 and Fig. 3b). A person of ordinary skill is motivated to modify Rorvick with Funari to obtain weld of desired size.

[Re claim 9] The combined teaching of Rorvick and Funari discloses a method of joining a connection member to a foil, the method comprising: placing the connection member against a hardened surface; placing the foil between the connection member and a staking tool; and forcing the foil into the connection member with the staking tool, as shown above.

[Re claim 39] The combined teaching of Rorvick and Funari discloses a method of joining two or more foils, the method comprising: positioning the two or more foils in a stack, and forcing the two or more foils together between a hardened surface and a staking pin which has a tip of less than approximately 0.060" (1.524 mm) in diameter; [Re claim 40] wherein the staking pin has a tip of approximately 0.025" (0.635 mm) in diameter; [Re claim 43] wherein forcing the two or more foils together comprises forcing at least one foil comprising an etched anode foil together with one or more other anode foils; [Re claim 44] wherein forcing the two or more foils together comprises forcing three anode foils together, each anode foil comprising an etched foil; [Re claim 45] wherein positioning the foils comprises stacking three etched anode foils in a dimension perpendicular to a major surface of each of the anode foils, as shown above.

[Re claim 46] Rorvick also discloses wherein the two or more foils comprise two or more anode foils, each anode foil approximately 0.004" (0.1016 mm) thick (see col. 20, lines 14-54).

[Re claim 3] Funari also discloses wherein the staking pin has a conical shape approximately 0.015" (0.381 mm) at its tip (See col. 8, lines 13-15 and Fig. 3b). But the combined teaching of Rorvick and Funari fails to disclose expressly the frusto-conical shape. However, this would have been obvious for a person of ordinary skill to do so to obtain small weld with less interference with adjacent welds.

[Re claim 4] Funari discloses the positioning of the staking pin above the hardened surface (see par. bridging cols. 6-7) and Rorvick discloses the tab to be near the edge of the foil (see Fig. 4). But the combined teaching of Rorvick and Funari fails to disclose providing a second staking pin, wherein the two staking pins are approximately 0.040" (1.016 mm) apart; [Re claim 5 and 10] further comprising: positioning the staking pin to a terminal height of approximately 0.001" (0.0254 mm) above the hardened surface; positioning the staking pin to

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strike at approximately 0.1201" (3.048 mm) from an edge of the foil; [Re claims 6, 11, and 42] wherein forcing the connection member and the foil together comprises forcing the connection member and the foil together at a force between 100 and 1000 pounds; and [Re claim 41] setting the staking pin to a displacement height of approximately 0.001" (0.0254 mm) above the hardened surface. However, it would have been obvious to a person of ordinary skills in the art to have the appropriate number of welds at appropriate location depending in the shape and size of the electrodes and/or connection members and apply an appropriate force to ensure good welding while not breaking the electrodes or connection members.

[Re claim 12] Arguments stated in the rejection of claims 3 and 4 also apply. The combined teaching of Rorvick and Funari fails to disclose expressly that the pin is approximately 0.028" (0.7112 mm) at its base. However any variation in pin dimension in the present claims is obvious in light of the cited art, because the changes in dimension produce no unexpected function.

The routine varying of parameters to produce expected changes are within the ability of one of ordinary skill in the art. Patentability over the prior art will only occur if the parameter variation produces an unexpected result. In re Aller, Lacey and Hall, 105 U.S.P.Q. 233, 235. In re Reese 129 U.S.P.Q. 402, 406.

4. Claims 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elias et al. (USPN 5660737 hereinafter "Elias") in view of MacFarlane et al. (USPN 5584890, hereinafter "MacFarlane").

Referring to Fig. 2 and related text, Elias discloses [Re claim 36] a method of coupling a plurality of anode connection members of a capacitor, the method comprising: positioning each of the anode connection members so that each anode connection member is flush with each other anode connection member or connection members adjacent to each anode connection member; edge-connecting each anode connection member to the anode connection member or connection members adjacent to each anode connection member (see Fig. 2); [Re claim 37] wherein edge-connecting comprises laser welding along a seam between each of the anode connection members (see Fig. 2 and par. bridging cols. 4-5).

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But it fails to disclose expressly attaching an anode connection member to a plurality of anodes.

However, the missing limitation is well known in the art because MacFarlane discloses this feature (See Figs. 6, 6A).

A person of ordinary skill is motivated to modify Elias with MacFarlane to reduce capacitor size while increasing capacitance.

Therefore, it would have been obvious to combine Elias with MacFarlane to obtain the invention as specified in claims 36-37.

5. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elias in view of MacFarlane, as applied above, and further in view of Rorvick.

The combined teaching of Elias and MacFarlane discloses substantially the limitations of claim 38, as shown above.

But it fails to disclose expressly each of the plurality of connection members having a cut-out adapted to matchably fit within a notch on an anode.

However, the missing limitation is well known in the art because Rorvick discloses this feature (See Fig. 4, # 175d and 195d ).

A person of ordinary skill is motivated to modify Elias and MacFarlane with Rorvick to obtain capacitor of reduced size.

6. Claims 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over MacFarlane in view of Rorvick.

Referring to Figs. 2-6A and related text, MacFarlane discloses [Re claim 49] a method of assembling an anode stack, the method comprising: welding a tab to only a first anode foil by a first weld; and welding the first anode foil to a second anode foil by a second weld; [Re claim 50] a method of claim 49, wherein welding the first anode foil to the second anode foil comprises welding the first anode foil to at least two anode foils by the second weld; [Re claim 51] wherein weld the first anode foil to the second anode foil comprises welding a first anode foil having a tunnel-etched region to a second anode foil having a tunnel-etched region (See col.5, lines 19-37 and Figs 5-6A). But it fails to disclose expressly welding by staking.

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However, the missing limitation is well known in the art because Rorvick discloses this feature (See Figs. 4-6(c) ). A person of ordinary skill is motivated to modify MacFarlane with Rorvick to obtain better control of the welding and the quality of the welded foils.

[Re claim 52] The combined teaching of MacFarlane and Rorvick discloses a method of assembling a capacitor, the method comprising: assembling two or more anode stacks by a method comprising: staking a connection member to only a first anode foil by a first stake weld; and staking the first anode foil to a second anode foil by a second stake weld, as shown above. Rorvick also discloses stacking the two or more anode stacks into a capacitor stack; and welding each anode stack connection member to each other adjacent anode stack connection member (see par. bridging cols. 26-27).

7. Claim 53 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacFarlane in view of Rorvick, as applied above, and further in view of Funari.

The combined teaching of MacFarlane and Rorvick discloses substantially the limitations of claim 53, as shown above.

But it fails to disclose expressly wherein staking the first anode foil to the second anode foil comprises forcing the first anode foil together with the second anode foil with a staking pin having a tip diameter less than approximately 0.060" (1.524 mm)..

However, it is well known in the art because Funari discloses this feature, as shown above.

Therefore, it would have been obvious to combine MacFarlane and Rorvick with Funari to obtain the invention as specified in claim .

8. Claims 8 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rorvick in view of Funari or MacFarlane in view of Rorvick, as applied above, and further in view of Strange et al. (USPN 6299752, hereinafter "Strange" ).

The combined teaching of Rorvick and Funari or MacFarlane and Rorvick discloses substantially the limitations of claim 54 , as shown above.

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But it fails to disclose expressly wherein the first anode foil and the second anode foil each comprise an anode foil having a porous structure and a formation voltage of greater than approximately 441 volts.

However, Strange discloses this feature (See col. 10, lines 24-65).

A person of ordinary skill is motivated to modify Rorvick and Funari or MacFarlane and Rorvick with Strange to obtain a capacitor capable of tolerating high voltage.

9. Claim 55 is rejected under 35 U.S.C. 103(a) as being unpatentable over MacFarlane in view of Rorvick, as applied above, and further in view of Elias

The combined teaching of MacFarlane and Rorvick discloses substantially the limitations of claim 55, as shown above.

But it fails to disclose expressly wherein welding each anode stack connection member to each other adjacent anode stack connection member comprises edge-welding the connection members together.

However, Elias discloses this feature (See Fig. 2).

A person of ordinary skill is motivated to modify MacFarlane and Rorvick with Elias to obtain a well aligned and planar connection.

10. Claims 70, 73, and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Strange .

Strange discloses a method of preparing an anode for a capacitor, the method comprising: etching an anode foil; and forming a dielectric layer on the anode foil at a high formation voltage (See col. 6, lines 6-23 and par. bridging cols 10-11).

But it fails to disclose expressly the claimed range.

However, In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a *prima facie* case of obviousness exists (See MPEP 2144.05).

11. Claim 71 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strange, as applied above, in view of MacFarlane.

Strange discloses substantially the limitations of claim 71 , as shown above.



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But it fails to disclose expressly wherein etching comprises tunnel etching.

However, MacFarlane discloses that the use of tunnel etched foils is well known and common in the art (see col. 5, lines 19-37).

A person of ordinary skill is motivated to modify Strange with MacFarlane to obtain the desired surface area and capacitance.

12. Claim 72 is rejected under 35 U.S.C. 103(a) as being unpatentable over Strange, as applied above, in view of Akami et al. (USPN 6375688, hereinafter "Akami").

Strange discloses substantially the limitations of claim 71, as shown above.

But it fails to disclose expressly wherein etching includes forming one or more perforations in the anode foil. However, Akami discloses that the use of etched foils having perforation is well known and common in the art (see Embodiment 11).

A person of ordinary skill is motivated to modify Strange with Akami to obtain stronger foils ensuring capacitor reliability.

### ***Conclusion***

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ha Nguyen whose telephone number is (571) 272-1678. The examiner can normally be reached on Monday-Friday from 8:30AM to 6:00PM, except the first Friday of each bi-week. The telephone number for Wednesday is (703) 560-0528.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Neibling, can be reached on (571) 272-1679. The fax phone number for this Group is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Ha Nguyen

Primary Examiner

08- 20- 04